What is claimed is:

1. An assembly device for compliantly positioning a control object, comprising:

a frame;

a moveable robotic arm which projects from the frame;

a locking arm moveable between a locked position and an unlocked position, the locking arm having an engagement portion biased toward an alignment position relative to the frame so that the locking arm is normally in a locked position;

an end effector attached to the robotic arm and configured to support the control object; and

a plunger coupled to the locking arm and configured to engage an alignment feature associated with a desired placement of the control object, wherein the engagement portion maintains the end effector in a substantially noncompliant condition when the locking arm is in the locked position and wherein pressing engagement of the plunger against the alignment feature causes the locking arm to move to the unlocked position to introduce compliance into the end effector to allow freedom of movement of the end effector relative to the control object.

2. The assembly device of claim 1 wherein the engagement portion of the locking arm comprises a first end of the locking arm, wherein the locking arm further comprises a medial portion and a second end, wherein the medial portion of the locking arm is pivotally affixed to the robotic arm, and wherein the first end of the locking arm is configured to engage the frame in a ball and socket arrangement when the locking arm is in the locked position.

3. The assembly device of claim 1 wherein the engagement portion of the locking arm comprises a first end of the locking arm, wherein the locking arm further comprises a medial portion and a second end, wherein the medial portion of the locking arm is affixed for linear movement relative to the robotic arm, and

wherein the first end of the locking arm is configured to engage the frame in a ball and socket arrangement when the locking arm is in the locked position.

4. The assembly device of claim 1 further comprising a controller, wherein premature movement of the locking arm to the unlocked position causes the controller to interrupt placement of the control object.

5. The assembly device of claim 1 wherein the control object comprises a first object, wherein the alignment feature comprises a wall of an aperture of the work object, and wherein the first end of the plunger comprises a conical tip to align with the aperture for transfer of the first object from the end effector to the work object when the locking arm is in the unlocked position.

6. The assembly device of claim 1 further comprising an x slider attached to the frame that allows movement of the end effector in an x direction when the locking arm is in the unlocked position, wherein the locking arm substantially restricts movement of the end effector in the x direction when the locking arm is in the locked position.

7. The assembly device of claim 6 further comprising a y slider attached to the frame that allows movement of the end effector in a y direction normal to the x direction when the locking arm is in the unlocked position, wherein the locking arm substantially restricts movement of the end effector in the y direction when the locking arm is in the locked position.

8. The assembly device of claim 1 further comprising an unload arm to advance the control object when the plunger is pressingly engaged against the alignment feature.

9. The assembly device of claim 1 wherein the control object comprises a disc stack which is placed onto a spindle motor hub.

10. The assembly device of claim 8 wherein the alignment feature comprises a wall of an aperture which extends into a second control object.

11. A compliance mechanism for positioning a control object, comprising:

a frame;

a robotic arm which extends from the frame;

a locking arm attached to the robotic arm for movement between a locked and an unlocked position, wherein the locking arm is biased in the locked position;

a socket affixed to a selected one of the frame and the locking arm;

a socket ball affixed to the remaining one of the frame and the locking arm;

an end effector which extends from the robotic arm to engage the control object; and

a plunger extending adjacent the end effector coupled to the locking arm and configured to align with an alignment feature associated with a desired placement of the control object, wherein the socket and the socket ball cooperate to maintain the end effector in a reference position with respect to a reference plane when the locking arm is in the locked position, and wherein the locking arm moves to the unlocked position when the first end of the plunger engages the alignment feature, causing the introduction of compliance in the end effector along the reference plane sufficient to facilitate freedom of movement of the control object.

12. The compliance mechanism of claim 11 further comprising a biasing member which biases the locking arm in the locked position.

13. The compliance mechanism of claim 11 wherein the locking arm pivots between the locked and unlocked position.

14. The compliance mechanism of claim 11 wherein the locking arm moves in a linear direction between the locked and unlocked position.

15. The compliance mechanism of claim 11 wherein the alignment feature comprises a wall of an aperture and wherein the plunger comprises a

15. The compliance mechanism of claim 11 wherein the alignment feature comprises a wall of an aperture and wherein the plunger comprises a conical tip which is moveable along the wall of the aperture to align the control object when the locking arm is in the unlocked position.

16. The compliance mechanism of claim 11 further comprising an x slider attached to the frame that allows movement of the end effector in an x direction when the locking arm is in the unlocked position, wherein the locking arm substantially restricts movement of the end effector in the x direction when the locking arm is in the locked position.

17. The compliance mechanism of claim 16 further comprising a y slider attached to the frame that allows movement of the end effector in a y direction normal to the x direction when the locking arm is in the unlocked position, wherein the locking arm substantially restricts movement of the end effector in the y direction when the locking arm is in the locked position.

18. The compliance mechanism of claim 10 wherein the control object is a disc/spacer stack which is aligned with a spindle motor hub.

19. The compliance mechanism of claim 10 further comprising a controller to control the operation of the compliance mechanism.

20. The compliance mechanism of claim 10 further comprising a socket sensor to sense when the socket ball is displaced from the socket.